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REMARKS

Claims 1-5, 9-12, and 21-32 have been cancelled. Claims 15-18 and 33-35 remain pending in the present application.

35 U.S.C. § 103

The Examiner rejected claims 15-18 and 33-35 under 35 U.S.C. § 103(a) as being unpatentable over Sugimoto in view of Kimura. It appears that the Examiner is actually applying Banan for teaching a water jacket because Kimura does not teach such a jacket. Instead, Kimura teaches a cup 29 forming a processing space and having a temperature control function (Col. 5, lines 1-5). Kimura does not teach or suggest that the cup 29 is a water jacket.

The Examiner has not established a *prima facie* case of obviousness. According to MPEP §2143, the three showings that must be made to establish a *prima facie* case of obviousness are: a motivation to combine the references; a reasonable expectation of success; and a showing that the references teach or suggest each and every feature of the claimed invention.

Motivation to combine the references

The Examiner has not shown that the prior art suggests the desirability of the combination of Sugimoto, Kimura, and Banan, and the references themselves do not suggest the desirability of the combination. MPEP § 2143.01 emphasizes that the prior art must suggest the desirability of the combination.

The air conduit 30 of Sugimoto is used to supply an air flow F through an opening 20 under the substrate W (Col. 5, lines 26-58; Col. 7, lines 57-67). The air flow F moves through the opening 20 to become an adjusted air flows F1, and air flows F1 prevents mist and particles from flowing around the lower surface of the substrate wafer W (Col. 7, lines 57-67). The air flows F1 are necessary for preventing the mist and particles from flowing around the lower surface because the spinning substrate creates a negative pressure under the substrate (Col. 7, lines 57-67). The air flow F also is adjusted to a predetermined temperature and humidity to maintain the lower surface of the substrate W at a predetermined temperature (Col. 8, lines 21-30). Additionally, the air flow F maintains the temperature and humidity of the atmosphere to assure uniform film formation.

The Examiner states that "it would have been obvious for one of ordinary skill in the art at the time invention was made to replace external air flow temperature adjustment unit of

Sugimoto by a water jacket around the gas flow enclosure (30) like the one Yoshio Kimura discloses around the rotary spindle in order to have more efficient and less expensive temperature control system...." As discussed above, Kimura does not appear to teach a water jacket. However, Banan does have a water jacket. However, there is no motivation to replace the external air flow temperature adjustment unit of Sugimoto with a water jacket. The air flow adjustment unit of Sugimoto is central to the invention and serves to keep the underside of the wafer from becoming contaminated (Col 7, lines 57-67). If the air flow adjustment unit of Sugimoto were replaced with a water jacket, the underside of the wafer would become contaminated because no flow F would be introduced into the air flow conduit 30. The exhaust zone 10 does not function to keep the underside of the wafer clean. A water jacket would not simplify the temperature control of Sugimoto because it would cause contamination.

Additionally, there is no motivation to add a water jacket to the Sugimoto assembly. The air flow adjustment unit of Sugimoto serves to control the temperature of the underside of the wafer and to prevent the underside of the wafer from becoming contaminated as discussed herein. There is no reason to add a water jacket to perform the function of the air flow adjustment unit.

The Examiner has not shown that there is a motivation to combine Sugimoto and Kimura with respect to the temperature control flange of Kimura. The air flow F of Sugimoto serves to keep the underside of the wafer W at a predetermined temperature as discussed above. There is no suggestion in Sugimoto that heat conduction from the motor to the wafer is a concern because the temperature of the wafer is already controlled. Additionally, there is no suggestion in Kimura that a temperature control flange is needed when the underside of the wafer is already temperature controlled. One having skill in the art would have no motivation to combine Sugimoto and Kimura as the Examiner suggests.

Reasonable expectation of success

The Examiner has not shown that there is a reasonable expectation of success if Sugimoto, Kimura, and Banan are combined as the examiner suggests. As discussed above, the air flow adjustment unit of Sugimoto provides an airflow F that prevents contamination of the underside of the wafer W. If the temperature control function were to be performed by a water jacket as the Examiner suggests, the underside of the wafer would become contaminated. Thus,

one having skill in the art would not expect that adding a water jacket to the assembly of Sugimoto would allow the Sugimoto invention to function properly.

References teach or suggest every aspect of the claimed invention

However, even if Sugimoto were modified with Kimura and Banan as the Examiner suggests the references fail to teach each and every aspect of the claimed invention. For example regarding independent claims 15-18, none of the references teach a rotary spindle passage through a flange body from an upper surface to a lower surface. Contrary to the Examiner's assertion, Kimura does not show a passage extending through the flange from an upper surface to a lower surface. Such a passage is not shown in the drawings nor described in the specification of the patent. A passage is not necessary for the operation of the invention. For example, it is entirely possible that the flange 31b is located next to rotary shaft 31a on one side of the rotary shaft. Sugimoto and Banan do not teach a heat regulation flange.

Regarding independent claims 15-18, none of the references teach a temperature sensor positioned in thermal communication with a flange body proximate to the passage. Even if Kimura has a temperature sensor on the flange body, Kimura does not teach or suggest a temperature sensor proximate to a passage because Kimura does not teach a passage. Sugimoto and Banan do not teach a heat regulation flange.

Regarding independent claims 15-18, none of the references teach a fluid conduit defining a substantially cylindrical heat regulation void defining an inside diameter selected to accommodate an object subject to heat regulation and a circumferential gas flow path between an object and a fluid conduit. Banan teaches a water jacket 33 having insulation 25 and a resistance heater 5 between the water jacket 33 and the crucible 3. Therefore, the water jacket 33 cannot define a heat regulation void defining an inside diameter selected to accommodate an object subject to heat regulation and a circumferential gas flow path between an object and a fluid conduit, because any gas flow path could not be between an object and the water jacket, and Banan does not suggest such a heat regulation void. Similarly, any gas flow path could not be between the drive shaft of the crucuible drive unit 7 and the water jacket 33. Sugimoto and Banan do not teach a fluid conduit defining a substantially cylindrical heat regulation void.

Claims 33-35 are dependent on claim 16. Therefore, the Examiner has not established a *prima facie* case of obviousness, and applicants respectfully request that the rejection of claims 15-18 and 33-35 be withdrawn.

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CONCLUSION

Applicants respectfully submit that, in view of the above amendments and remarks, the application is now in condition for allowance. Early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,

KILLWORTH, GOTTMAN, HAGAN
& SCHAEFF, LLP

By Joan N. Williams
Joan N. Williams
Registration No. 52,364

One Dayton Centre
One South Main Street, Suite 500
Dayton, Ohio 45402-2023
(937) 223-2050
Facsimile: (937) 223-0724
E-mail: williamsj@kghs.com